3.—AN ECOLOGICAL STUDY NEAR BERAKING FOREST STATION.

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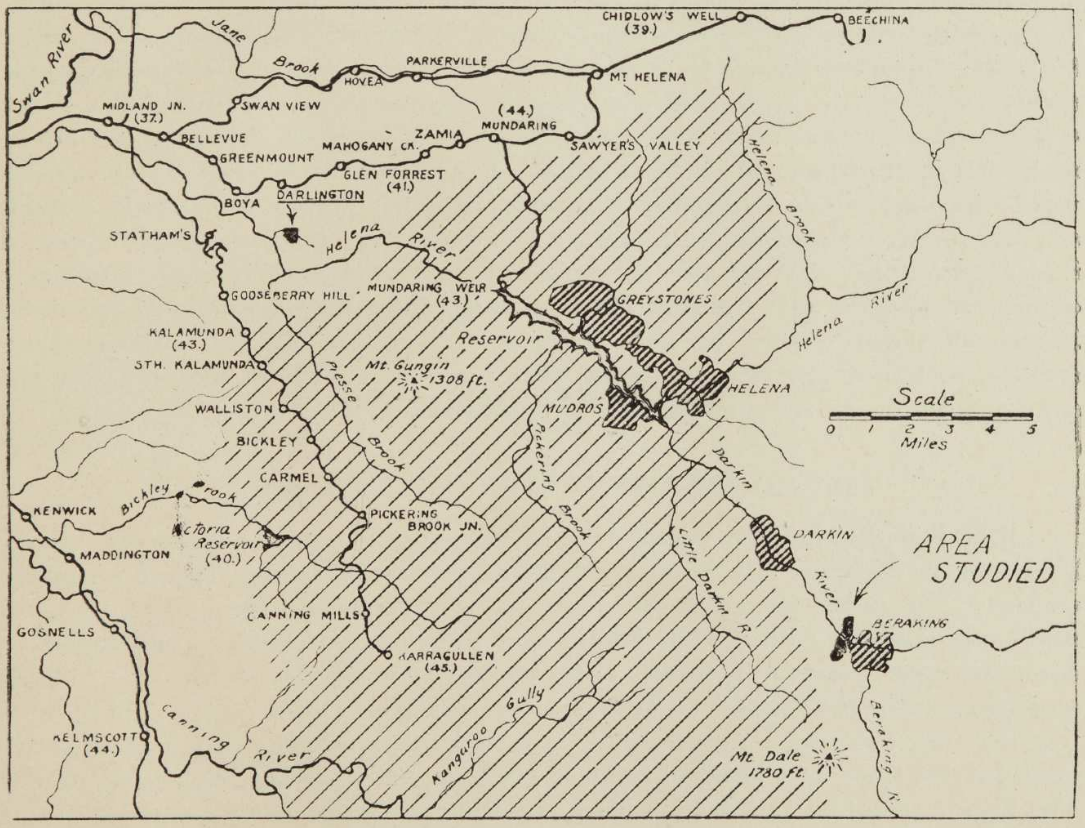
This paper records certain ecological field work conducted in 1932. Absence from the State has precluded the extension of this work, and a sense of its incompleteness made the author withhold it from publication. This decision is now reversed in the hope that the work may stimulate further interest in the ecology of the State. In the study of this subject Western Australia lags far behind the other States of the Commonwealth, and in certain areas the ravages of bushfires have so modified the vegetation that it is becoming increasingly difficult to define and classify the natural plant communities. Elsewhere, the rapid extension of land development may soon make it impossible to piece together a picture of the natural vegetation of the affected areas.



Text fig. 1.—Locality Plan. The light hatching shows the distribution of the "prime Jarrah forest," and the heavy hatching that of the pine plantations. The figures in parentheses indicate rainfall in inches per annum.

Beraking Forest Station is at the confluence of the Beraking and Darkin Rivers and is some thirteen miles south-east of the Mundaring Weir (*see* Text fig. 1). The area studied constitutes a broad transect across the Darkin River Valley and is immediately west of the Beraking pine plantation. Part of the area has since been cleared for further afforestation (*see* Text fig. 2, sections 14 and 15), and it would be of interest to study the growth response of the pines in relation to the vegetation types mapped for this portion of the area. The Beraking area is about seventeen miles from the small area

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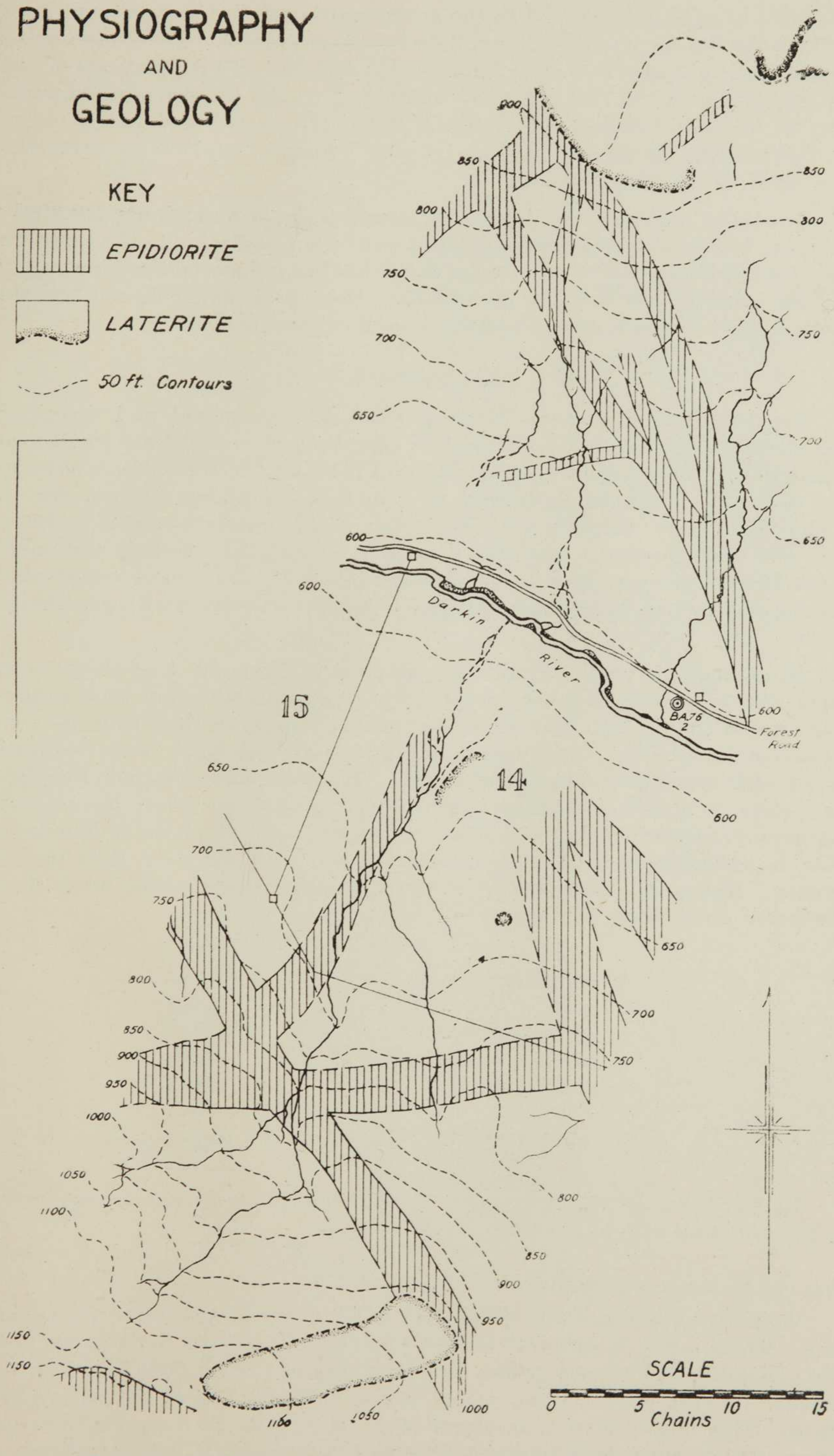
near Darlington studied previously (Williams, 1931–32), and between them lies a belt of the "prime Jarrah forest." Both areas fall within the semi-arid, warm-temperate bioclimatic zone as defined by Davidson (1936); thus for only five months, May to September inclusive, the ratio P/E is greater than 0·5. The mean annual temperature is between 60° and 65°F., and the mean annual rainfall is approximately 40 inches. The geology of the two areas is essentially the same, and as far as may be judged from a superficial examination of the soils, several of the soil types are represented in each of the localities. These common climatic and edaphic features add interest to a comparison of the vegetation of the Beraking and Darlington areas.

The area was first covered by a chain and compass survey, using the survey peg near reference tree BA. 76/2 as the datum, and the boundary pegs of section 14 as checks. The 50 ft. contours shown in Text fig. 2 are based on Abney level readings and an assumed altitude of 600 ft. for the datum peg. The mapping of geological features was based on outcropping rock and other surface indications; the more conjectural boundaries of epidiorite dykes are shown as broken lines. The plant communities of Text fig. 3 were determined solely by tree dominance. This criterion was chosen here, as at Darlington, because of the detailed nature of the work, and because the writer felt that it was premature to attempt the direct mapping of plant associations except on a basis of wide field experience. Information concerning the shrub stratum and ground flora was obtained from a series of 68 sampling sites, most of which are shown in Text fig. 3. For each site the component species were allocated to five somewhat arbitrary frequency-classes (dominant, abundant, frequent, occasional, and rare). The sampling sites were later grouped into larger units of from one to eight sites on a basis of obvious similarity of habitat and floristic composition; average frequency symbols of the more important plant species in such units are given in Table 1. Many other species, including herbaceous types, were recorded for these sites and for the seral communities not included in the analysis.

PHYSIOGRAPHY, GEOLOGY AND SOILS.

Although the Darkin valley west of Beraking is not so rugged and gorge-like as is the Helena valley near Darlington, it is by no means that of a mature stream. The upper slopes are steep and there are considerable areas of exposed rock and shallow soil. Even where the soils are sufficiently developed to carry an open sclerophyll forest, they are very variable in depth and include rock fragments and boulders in the upper horizons. Below the 700 ft. contour the slope is much reduced, the soils are more mature and, to the south of the river, there is a band of light sandy loam which is alluvial in character. The minor tributaries shown in Text fig. 2 are little more than gutters which flow only after heavy rain. Their courses are distinct at first but tend to be lost in the sandy soils below the 650 ft. contour. There is, however, a more or less permanent spring at the 850 ft. level of the stream on the southern slope; it occurs above the intersection of two epidiorite dykes.

The "breakaway" of the laterite level is at approximately 900 ft. on the northern side of the river, and the lateritic tableland which extends to the north of the area is almost flat. The gap shown in the "breakaway" is the outlet for an area over which the laterite has disintegrated to an extremely gravelly soil with no boulders. Near the southern boundary of the area there is an "island" of laterite which dips north-east at 10° and, at its highest point, is more than 200 feet above the tableland to the north. An extensive lateritic plateau lies to the west of this "island." Other small areas of laterite in the



Text fig. 2.—Physiography and Geology of the Beraking Area.

vicinity occur at varying altitudes and exhibit pronounced angles of dip. Lateritic gravel is not confined to the areas mentioned, but is present at least in the surface layers of much of the soil derived from granite. Two considerable areas of such gravelly soil occur between the 650 and 750 ft. contours of the southern slope, and at two points indicated in Text fig. 2 there are accumulations of lateritic boulders. Presumably both the gravel and the boulders are derived from the once continuous lateritic " cuirass," and are not remnants of a shelf of low-level laterite.

Several of the epidiorite dykes of the area strike in a north-northwesterly direction, but others cross these more or less at right angles. On the southern slope the relatively slow weathering of the dykes has influenced the topography to some extent. The red soils derived from these basic dykes do not contain lateritic gravel except in the vicinity of the " breakaways."

VEGETATION.

For the Darlington area Williams (1931–32) recognized and described two plant associations ; the *Eucalyptus calophylla-E. redunca* association on soils derived from granite and epidiorite, and the *Eucalyptus marginata* association normally developed on laterite and on soils containing lateritic gravel. Within the former association, consociations of *E. calophylla* and *E. redunca* were also distinguished. Had the area been extended to include the gorge of the Helena River, a third association dominated by *Eucalyptus rudis* would have been described for the more favourable habitat associated with permanent water.

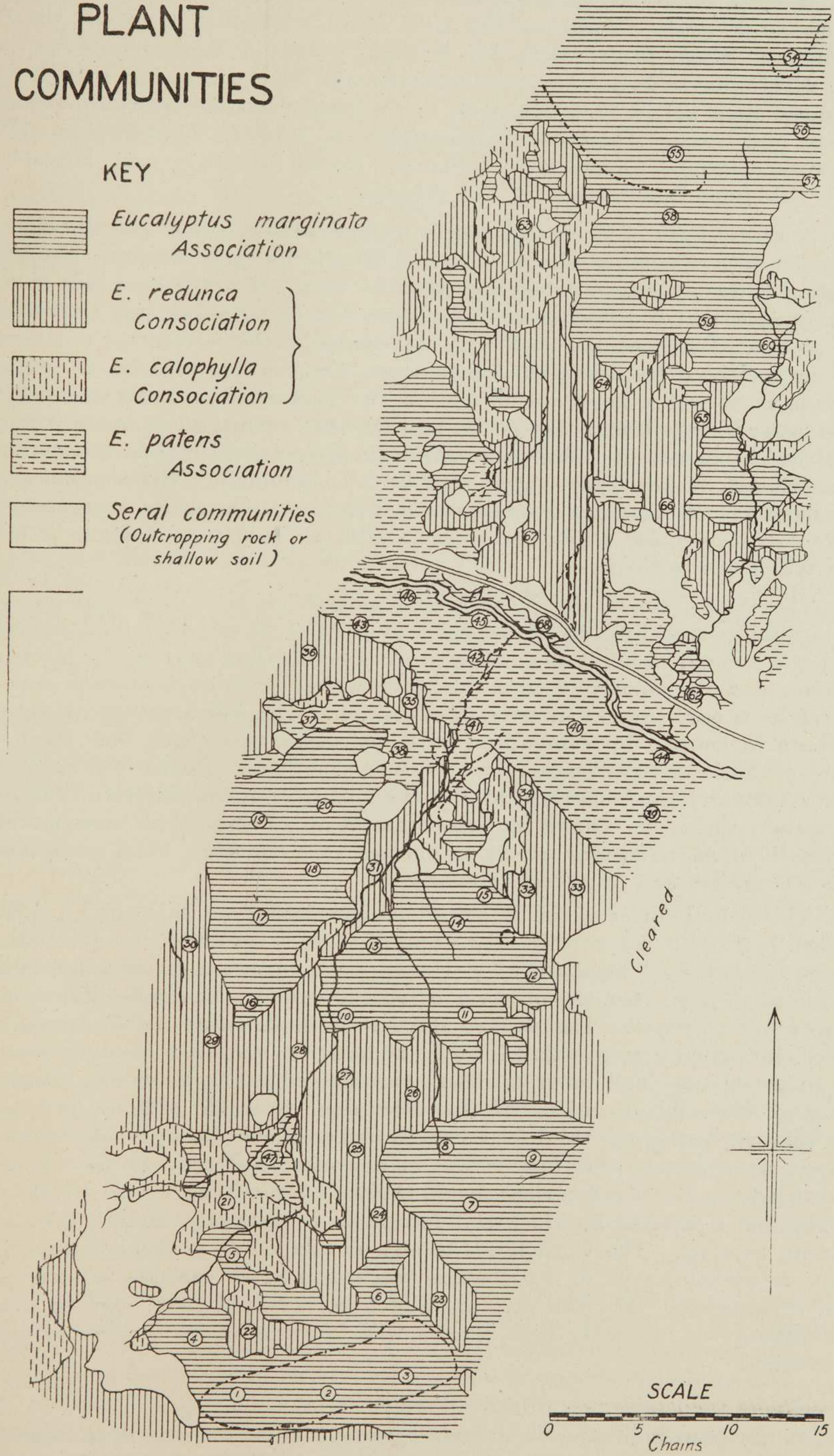
In naming the plant communities mapped in Text. fig. 3 of the present paper, the writer has retained the classification given above, but no considerable area of the *E. calophylla-E. redunca* association as distinct from its consociations was found. Small areas on which both eucalypts occur together have been mapped according to dominance. The community of which *Eucalyptus patens* is the tree dominant is certainly a distinct plant association. *Eucalyptus rudis* occurs only with *E. patens* on the area studied, but it dominates what is undoubtedly a distinct association on low-lying river flats in the vicinity. The plant communities of the Beraking area, together with their respective areas, were as follows :—

		acres.
1.	*E. marginata* association	70·0
2.	*E. redunca* consociation	53·3
3.	*E. calophylla* consociation	16·7
4.	*E. patens* association	22·8
5.	Seral communities	21·3
	Total	184·1 acres.

In the brief descriptions which follow, the figures in parentheses refer to the sampling sites of Text fig. 3 and Table 1.

Eucalyptus marginata Association (1–20, 48–62).

This association is developed in three fairly distinct forms on the Beraking area. These differ in structure and to some extent in their floristic composition. For the district as a whole, the most typical form is that found on the lateritic plateau (1–3, 48–55), where it tends to form a closed sclerophyll forest. This is almost a pure stand of *E. marginata* (five to six trees per square chain) on the tableland to the north of the area studied, but elsewhere


PLANT COMMUNITIES
KEY
Eucalyptus marginata Association
E. redunca Consociation
E. calophylla Consociation
E. patens Association
Seral communities (Outcropping rock or shallow soil)
Cleared
SCALE
0
5
10
15
Chains

Text fig. 3.—Plant Communities of the Beraking Area.

NB.—Sampling sites 48-53 are on the tableland to the North of the area.

E. calophylla is present in small numbers. In places, *Banksia grandis* and *Casuarina Fraseriana* form an ill-defined stratum of small trees (cf. the *C. Fraseriana* society described for the Darlington area). *Xanthorrhoea Preissii* and *Macrozamia Reidlei* are constant members of the association and, by virtue of their height (3–6 ft.), must be excluded from the stratum of small shrubs and herbs. The latter is dominated by *Hibbertia hypericoides*, while *Hibbertia montana*, *Adenanthos barbigera*, *Hakea ruscifolia* and *Dryandra nivea* are important species of the stratum.

A second form of the association is to be found on steep gravelly slopes (4–9, 56–60), usually in direct contact with the lateritic plateau. On this habitat *E. marginata* is stunted, and there are many more trees per unit area ; *E. calophylla* and *E. redunca* may both be present, but *Banksia* and *Casuarina* are absent. Furthermore, the whole appearance of the association is altered by the increased frequency of *Xanthorrhoea Preissii* (Plate 1, fig. 2), many specimens of which have not developed the characteristic grass-tree habit. This latter feature brings the species into the shrub stratum, of which it may even be the dominant. Elsewhere *Hibbertia hypericoides* retains the dominance, though *Hakea bipinnatifida* may be a co-dominant. Other important members of the stratum are *Dryandra nivea*, *Gompholobium marginatum*, *Hakea amplexicaulis*, *Petrophila striata*, *Hibbertia montana*, *Scaevola striata* and *Xanthosia peltigera*.

The third form of the *E. marginata* association is to be found on the more mature gravelly soils of the lower slopes (10–20, 61–62). This habitat supports a stand which is as good as or even better than that on the lateritic plateau, but the associated trees are those which occur on the steep slopes. *E. patens* is only present in areas of transition. The shrub stratum is intermediate in density by comparison with the other two forms, but there is more evidence of modification by fire than elsewhere. *Hakea bipinnatifida* and *Hibbertia hypericoides* are locally dominant, and *Xanthorrhoea Preissii* is again prominent. Other important members of the shrub stratum are *Dryandra nivea*, *Hibbertia montana*, *Baeckea camphorosmae*, *Bossiaea ornata*, *Scaevola striata* and *Xanthosia peltigera*.

These three forms of the *E. marginata* association are illustrated in Plate 1, figs. 1, 2 and 3 respectively. The first of these is typical of the association above the laterite "breakaway" ; the apparent openness of the community is due to the fact that the observer is looking out over the valley through a narrow belt of trees. The marked differences in structure demonstrated by these photographs suggest that it might be better to give each form the status of an association, and to group them together as an *E. marginata* edaphic complex (*vide* Wood, 1939). If this were done it would still not be clear whether the first or the third form here described should be styled the edaphic climax association. The first is the more widespread type in the vicinity and it is more uniform in structure and floristic composition ; it occurs, nevertheless, on a habitat in which soil formation is distinctly inhibited by the laterite capping. The third form, though developed on a more mature soil type, is discontinuous in distribution and much more variable in structure and composition. For the present, therefore, it would seem wise to avoid any attempt to interpret these communities in terms of the concept of plant succession.

Eucalyptus calophylla—*E. redunca* Association.

It has been indicated that this association is not developed at Beraking in the same manner as at Darlington and, in the light of wider experience in the field, it may prove advisable to subdivide the community at Darlington into three distinct associations.

The association as a whole is best described as an open sclerophyll forest, and at Beraking the component eucalypts are segregated into more or less pure stands of one or the other. The *E. calophylla* consociation is poorly developed on the area studied, but the *E. redunca* consociation covers a considerable area and is represented by two distinct types. These, too, might well be described as separate associations within an edaphic complex.

Eucalyptus calophylla Consociation (21, 63).

This community is of less frequent occurrence at Beraking than it is at Darlington, though a fine stand of some 25 acres extent occurs to the north-west of the area studied. As at Darlington, the community tends to be restricted to granitic soils, possibly because of more favourable soil-moisture relations. The best example on the area studied is above the spring and below an extensive area of bare granite and shallow soil (21). *E. redunca* and *E. marginata* are associated eucalypts, though not in the immediate vicinity of the sampling site. *Xanthorrhoea Preissii* is abundant and *Macrozamia Reidlei* frequent in occurrence. *Hakea bipinnatifida* is the shrub dominant, while *Hibbertia hypericoides*, *Hakea undulata*, *Dryandra nivea*, *Acacia pulchella* and *Gompholobium marginatum* are important species of the stratum.

On the northern slope (63), the shrub stratum of this community is greatly modified by fire, as is shown by the local dominance of the fern, *Cheilanthes tenuifolia*, and the abundance of the annual composite, *Helipterum Cotula*. *Ranunculus lappaceus* is present, but the more typical sclerophyllous undershrubs are poorly represented.

Eucalyptus redunca Consociation (22–36, 64–67).

Comparison of Text figs. 2 and 3 reveals a strong correlation between the distribution of this plant community and the epidiorite dykes of the area. This is very pronounced on the southern slope, and it would be even more obvious if a map showing the distribution of the red soils derived from these basic rocks were available. The parallel observations on this point made by Clarke and Williams (1926–27) and Williams (1931–32) for the Darlington area are thus amply confirmed.

On the steep upper slopes where the soil is definitely immature (22–30, 64–66), the trees are somewhat stunted but have a relatively high frequency (*see* Plate 2, fig. 4) ; *E. calophylla* may be present, but *E. marginata* occurs only on transitional areas (*e.g.* 22–33). *Xanthorrhoea* and *Macrozamia* are prominent, and the shrub stratum is well developed and rich in species. Dominance of this stratum is shared by the two ubiquitous species *Hibbertia hypericoides* and *Hakea bipinnatifida*, with *Acacia pulchella* coming in less frequently as a local dominant. Other important species are *Hibbertia montana*, *Dryandra nivea*, *Hakea undulata*, *Petrophila striata*, *Lasiopetalum floribundum*, *Gompholobium marginatum*, *Phyllanthus calycinus*, *Eryngium rostratum*, *Scaevola striata* and *Stylidium reduplicatum*.

On the more mature soil of the lower slopes (31–36, 67), the community tends to become a pure stand of *E. redunca* ; *E. calophylla* and *E. patens* may, however, be present on areas of transition. The trees are well developed and somewhat widely spaced (*see* Plate 2, fig. 5), but the shrub stratum is poorly developed and patches of bare soil are not infrequent. *Xanthorrhoea* and *Macrozamia* are much less frequent and may sometimes be absent. Dominance of the shrub stratum is assumed by no fewer than four species at different places within this vegetation type : the species concerned are *Hibbertia hypericoides*, *Hypocalymma angustifolium*, *Dryandra nivea* and *Dampiera alata*, This feature may or may not be attributable to the influence of bushfires. Other species of importance are *Hibbertia montana*, *Hibbertia gracilipes*, *Hakea bipinnatifida*, *Grevillea pilulifera*, *Baeckea camphorosmae*, *Eryngium rostratum* and *Helipterum Cotula*.

Eucalyptus patens Association (37–47, 68).

Apart from transitional areas which grade into the *E. redunca* consociation, the *E. patens* association is restricted to the alluvial soils of the area studied, and hence to the southern bank of the river. Even here the association exhibits an ill-defined zonation, presumably dependent upon such factors as depth of soil and permanence of water.

On the transitional areas (37–38, 68), *E. calophylla* is common as an associated tree species, but *E. redunca* and *E. marginata* may also be present. *Acacia saligna* and *Dryandra nivea* are the shrub dominants for the sampling sites to the north and south of the river respectively. In other respects the shrub stratum has closer affinities with that of the low-level *E. redunca* community than with the shrub stratum of the typical *E. patens* association. *E. redunca* does not penetrate the outer zone of the *E. patens* association (39–43, and Plate II, fig. 6), except along the line of the creek (41–42), where it may be associated with the epidiorite dyke which presumably extends beneath the alluvium (*see* Text fig. 2). Elsewhere *E. calophylla* and *E. rudis* are associated tree species. *Xanthorrhoea Preissii* is abundant and the individuals are usually well developed, but *Macrozamia Reidlei* is absent from both outer and inner zones. In different places, *Acacia saligna* and *Hypocalymma angustifolium* are shrub dominants, but the following are also important :—*Pimelea argentea*, *Dryandra praemorsa*, *Acacia extensa*, *Hibbertia gracilipes*, *Dampiera linearis* and *Scaevola striata*.

The frequency of *E. rudis* increases for the inner zone of the association (44–46) ; *Banksia verticillata* is prominent as a small tree, and *Melaleuca rhaphiophylla* is also present. *Xanthorrhoea* is quite infrequent in occurrence. *Trymalium spathulatum* and *Acacia extensa* share the dominance of the shrub stratum, but *Acacia saligna* and *Agonis linearifolia* are important constituents, and *Viminaria denudata* and *Dryandra praemorsa* are worthy of note.

The one remaining example of the *E. patens* association is that in the vicinity of the spring on the southern slope (47). This isolated sample is some 250 feet above the rest of the association, and its habitat may differ with respect to soil and water relations. Whatever the cause, this example of the community differs markedly in floristic composition, and two of its constituent species have not been observed by the writer elsewhere in the Darkin or Helena River valleys. *E. calophylla* and to a lesser extent *E. marginata* are associated trees, and *Persoonia longifolia*† is present as a small tree. *Macrozamia* and *Xanthorrhoea* both occur but are not common. *Acacia extensa* dominates the shrub stratum, but the following species are conspicuous :—*Agonis linearifolia*, *Viminaria denudata*, *Hibbertia* sp., *Lepidosperma tetraquetrum*† and *Dryandra praemorsa*.

SUMMARY AND CONCLUSIONS.

The sclerophyll forest communities occurring on a small but representative area near Beraking Forest Station, Western Australia, have been mapped and described in some detail. For the sake of conformity with earlier work, these communities are tentatively classified within three major units, namely :—

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† These species were not observed elsewhere.

the *Eucalyptus marginata* association, the *E. calophylla-E. redunca* association, and the *E. patens* association. It is considered, however, that these units are too heterogeneous to be styled plant associations, and evidence is adduced which suggests that they might be more accurately described as edaphic complexes ; in which case seven or eight plant associations would have to be distinguished for the Beraking area.

The distribution of the plant communities may be determined by edaphic factors such as the distribution of laterite and lateritic detritus, the soil type as determined by the underlying rock formations, the maturity of these soils, and the soil-water relations. A more detailed study of these factors would be desirable in all future ecological investigations of this nature, but was not possible at the time of this investigation.

ACKNOWLEDGMENTS.

The writer is indebted to the Forests Department for providing accommodation and other facilities in the field, and to Miss Nancy T. Burbidge for constructive criticism of the manuscript. The completion of the field work in 1934, when the writer made a brief return visit to the State and to Beraking, took place during the tenure of a Hackett Research Studentship of the University of Western Australia.

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PLATE I.

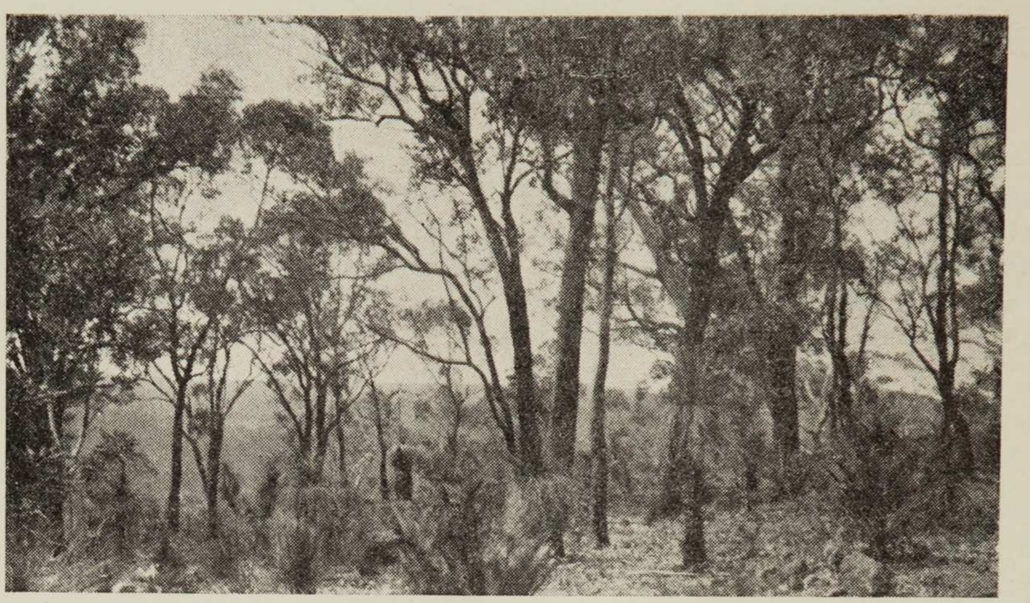

Fig. 1.—*E. marginata* association on laterite near sampling site 3.

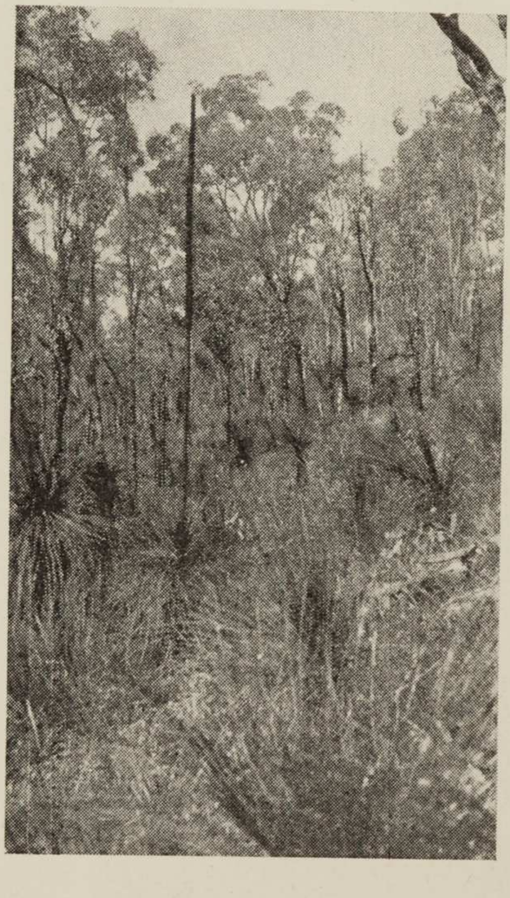

Fig. 2.—*E. marginata* association on steep gravelly slope below the laterite "breakaway" and near sampling site 7.

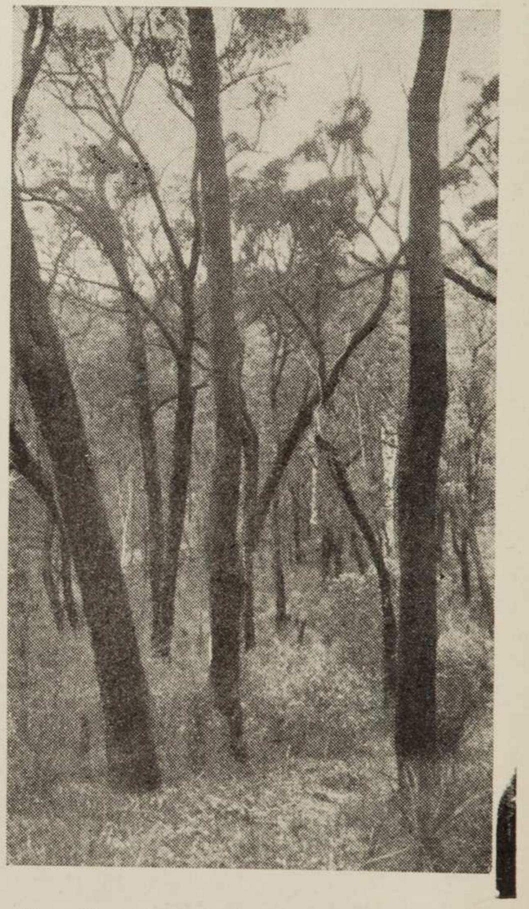

Fig. 3.—*E. marginata* association on more mature gravelly soil near sampling site 17.

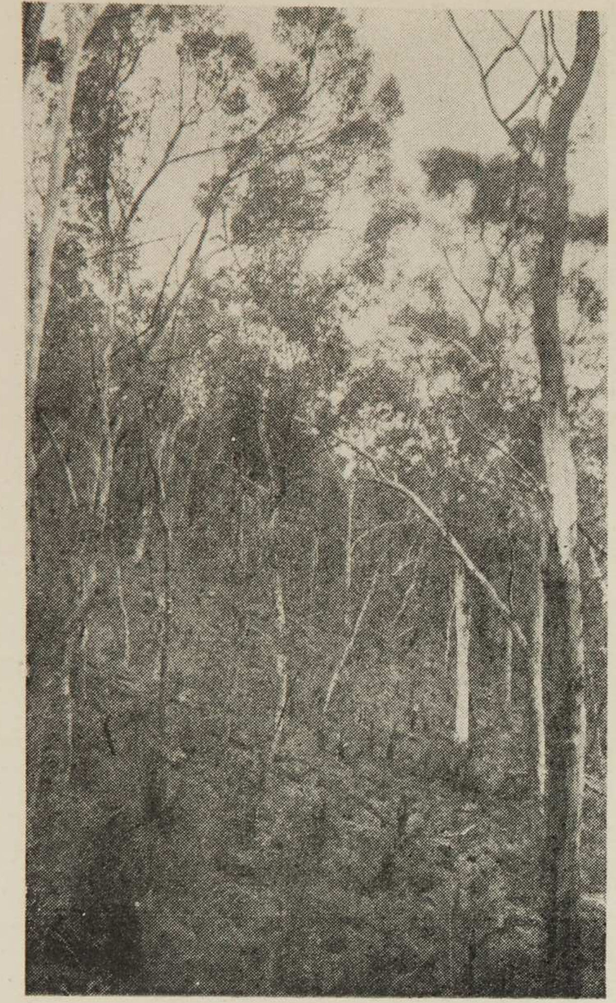

Fig. 4.—*E. redunca* consociation on steep slope and immature soil type near sampling site 27.

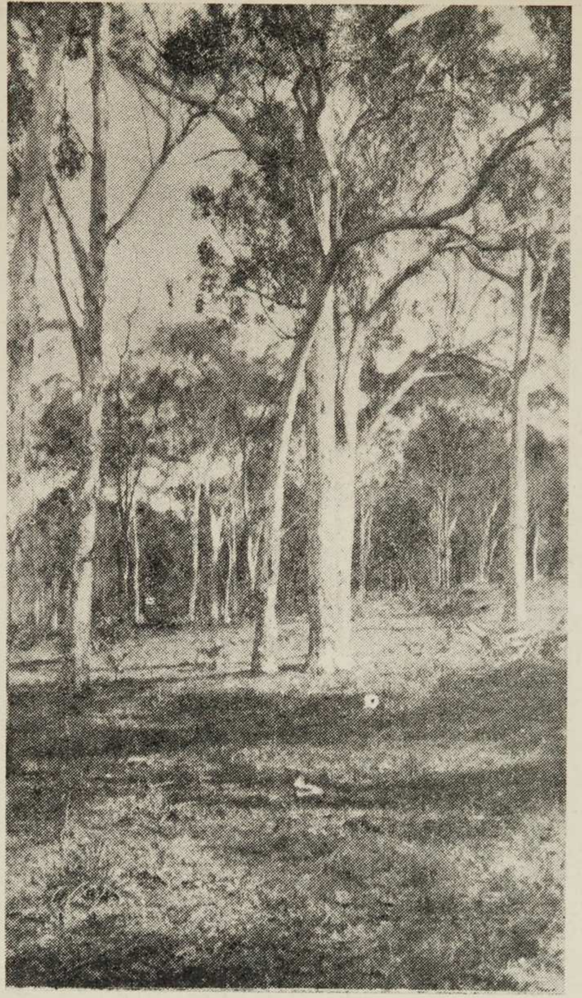

Fig. 5.—*E. redunca* consociation on more mature soil type near sampling site 67.

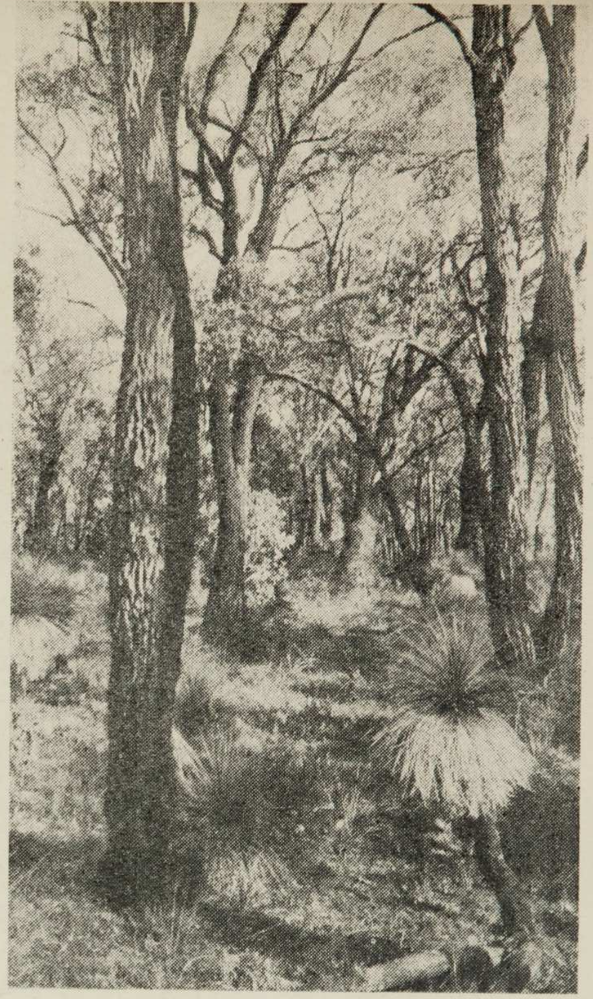

Fig. 6.—*E. patens* association on alluvial soil near sampling site 39. The photograph was taken some 10 ft. above the ground, and the specimen of *X. Preissii* in the foreground was approximately 6 ft. high.

Table 1.—Frequency Table for the important Plant Species of the Area.

General Location.	South of River.															North of River.							
Sampling Sites (*See* Text fig. 3).	1-3.	4-6.	7-9.	10-15.	16-20.	21.	22-25.	26-30.	31.	32-34.	35-36.	37-38.	39-43.	44-46.	47.	48-55.	56-58.	59-60.	61-62.	63.	64-66.	67.	68.
TREES—																							
Eucalyptus marginata, Sm.	*d*	*d*	*d*	*d*	*d*	....	o	....	....	....	....	o	....	....	o	*d*	*d*	*d*	*d*	....	....	....	....
Eucalyptus calophylla, R.Br.	o	o	o	o	o	*d*	o	o	....	o	....	f	o	....	f	o	o	o	f	*d*	o	....	....
Eucalyptus redunca, Schau. v. *elata*, Benth.	....	o	o	o	o	....	*d*	*d*	*d*	*d*	*d*	o	o	....	....	....	....	o	o	o	*d*	*d*	....
Eucalyptus patens, Benth.	....	....	....	....	....	....	....	....	o	o	....	*d*	*d*	*d*	*d*	....	....	....	o	....	....	....	*d*
Eucalyptus rudis, Endl.	....	....	....	....	....	....	....	....	....	....	....	....	o	f	....	....	....	....	....	....	....	....	....
SMALL TREES—																							
Banksia grandis, Willd.	o	....	....	....	....	....	....	....	....	....	....	....	....	....	....	o	....	....	....	....	....	....	....
Banksia verticillata, R.Br.	....	....	....	....	....	....	....	....	....	....	....	....	....	f	....	....	....	....	....	....	....	....	....
Casuarina Fraseriana, Miq.	f	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Melaleuca rhaphiophylla, Schau.	....	....	....	....	....	....	....	....	....	....	....	....	....	o	....	....	....	....	....	....	....	....	....
Persoonia longifolia, R.Br.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	f	....	....	....	....	....	....	....	....
SHRUB STRATUM AND GROUND FLORA—																							
Macrozamia Reidlei, (Gaud.) Gardner	f	f	f	f	f	f	f	f	f	o	o	o	....	....	o	f	o	o	f	f	f	f	o
Xanthorrhoea Preissii, Endl.	f	f	a	a	f	a	a	f	f	f	f	f	a	o	o	f	f	f	a	a	f	....	....
Acacia extensa, Lindl.	....	....	....	....	....	....	....	....	....	....	....	....	f	*cd*	*d*	....	....	....	....	....	....	....	....
Acacia pulchella, R.Br.	....	....	....	o	....	f	o	*ld*	....	....	....	....	....	....	....	....	....	o	....	....	o	o	....
Acacia saligna, Wendl.	....	....	....	....	....	....	....	....	....	....	....	....	*ld*	f	....	....	....	....	....	....	....	....	*d*
Adenanthos barbigera, Lindl.	a	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Agonis linearifolia, (D.C.) Schau.	....	....	....	....	....	....	....	....	....	....	....	....	....	f	a	....	....	....	....	....	....	....	....
Baeckea camphorosmae, Endl.	....	....	....	la	....	....	....	....	f	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bossiaea ornata, (Lindl.) Benth.	o	o	o	o	f	....	o	o	....	....	....	o	....	....	....	....	....	....	....	....	....	....	....
Cheilanthes tenuifolia, (Burm.) Swartz	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	*d*	....	....	....
Dampiera alata, Lindl.	....	....	....	....	....	....	....	....	....	....	....	....	o	....	....	....	....	....	....	....	....	*d*	....
Dampiera linearis, R.Br.	....	o	o	o	o	....	o	o	....	o	f	o	f	o	....	....	....	....	f	....	o	o	....
Dryandra nivea, R.Br.	o	f	f	f	f	f	f	f	f	*ld*	o	*d*	o	....	....	f	o	f	a	....	a	....	....
Dryandra praemorsa, Meissn.	....	o	....	....	....	....	....	o	....	....	....	....	f	o	f	....	....	....	....	....	....	o	....
Eryngium rostratum, Cav.	....	....	....	....	....	....	o	....	....	....	....	....	o	o	....	....	....	....	....	....	la	a	o
Gompholobium marginatum, R.Br.	....	f	f	f	o	f	f	f	f	....	f	o	....	....	....	....	....	....	o	....	....	....	f
Grevillea pilulifera, (Lindl.) Gardner	....	o	o	o	o	o	o	o	o	f	f	o	....	....	....	....	....	....	....	....	....	....	....
Grevillea synapheae, R.Br.	o	o	....	....	o	....	o	....	....	....	....	o	....	....	....	....	....	....	....	....	....	....	....
Hakea amplexicaulis, R.Br.	....	....	a	....	....	....	o	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Hakea bipinnatifida, R.Br.	o	a	*cd*	*d*	f	*d*	a	*cd*	a	o	....	o	o	....	o	o	a	a	*d*	o	*d*	o	f
Hakea ruscifolia, Labill.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	la	....	....	....	....	....	....	....
Hakea undulata, R.Br.	....	o	....	o	....	f	o	o	....	....	....	....	o	....	o	....	....	....	....	....	....	....	....
Helipterum Cotula, (Benth.) D.C.	....	....	....	....	....	....	....	....	....	o	....	....	o	....	....	....	....	o	....	a	f	a	o
Hibbertia gracilipes, Benth.	....	....	....	o	....	....	....	....	....	o	o	o	a	o	....	....	....	....	o	....	o	....	....
Hibbertia hypericoides, (D.C.) Benth.	*d*	*d*	*cd*	a	*d*	a	*d*	*cd*	*d*	*ld*	....	o	....	....	....	*d*	*d*	*d*	f	....	la	....	....
Hibbertia montana, Steud.	f	o	f	f	o	....	o	f	f	o	a	f	o	....	....	f	o	o	f	....	a	f	a
Hibbertia sp.	....	....	....	....	....	....	....	....	....	....	....	....	o	....	a	....	....	....	....	....	....	....	....
Hypocalymma angustifolium, Endl.	....	....	....	....	....	....	....	o	....	....	*d*	....	*ld*	....	....	....	....	....	f	....	o	....	f
Lasiopetalum floribundum, Benth.	....	o	....	....	....	....	....	la	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lepidosperma tetraquetrum, Nees.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	la	....	....	....	....	....	....	....	....
Leptomeria Cunninghamii, Miq.	....	....	....	....	....	....	....	o	....	....	....	....	....	....	....	o	o	o	o	....	....	....	....
Leucopogon capitellatus, D.C.	....	....	....	o	o	....	....	....	....	....	....	....	....	....	....	o	o	....	o	....	....	....	....
Petrophila striata, R.Br.	o	f	o	....	o	....	o	o	....	....	....	....	....	....	....	o	....	....	....	....	....	....	....
Phyllanthus calcycinus, Labill.	....	....	....	o	....	....	o	o	o	....	....	....	o	....	....	....	o	....	o	....	....	....	....
Pimelea argentea, R.Br.	....	....	....	....	....	....	....	....	....	....	....	....	la	....	....	....	....	....	....	....	....	....	a
Ranunculus lappaceus, Sm.	....	....	....	....	....	....	....	....	....	....	....	....	o	....	....	....	....	....	....	f	o	....	....
Scaevola striata, R.Br.	o	o	f	f	o	....	....	....	....	o	o	a	f	....	....	o	o	f	f	....	f	o	....
Stylidium amoenum, R.Br.	o	o	o	....	o	....	o	o	....	....	....	....	....	....	....	o	o	....	....	....	....	....	....
Stylidium Brunonianum, Benth.	....	o	o	....	o	....	o	o	....	....	....	o	....	....	....	....	....	....	....	....	....	....	....
Stylidium reduplicatum, R.Br.	....	....	....	....	....	....	o	f	....	....	....	....	....	....	o	....	....	....	....	....	....	....	....
Trymalium spathulatum, (Labill.) Ostf.	....	....	....	....	....	....	....	....	....	....	....	....	o	*cd*	....	....	....	....	....	....	....	....	....
Viminaria denudata, Sm.	....	....	....	....	....	....	....	....	....	....	....	....	....	o	a	....	....	....	....	....	....	....	....
Xanthosia peltigera, (Hook.) Benth.	o	o	....	o	o	....	....	....	....	....	....	....	....	....	....	o	f	....	....	....	....	....	....

N.B.—Sampling sites 48–53 are on the lateritic tableland to the north of the area studied, and are not shown in Figure 3.

d—dominant, *cd*—co-dominant, a—abundant, f—frequent, o—occasional.